Claim 19. (amended) A coating composition according to claim 13, further comprising monomeric or polymeric element-organic compounds selected from the group consisting of orthotitanic acid ester, orthozirconic acid ester, titanium tetralactate, hafnium tetrabutoxide, tetraethyl silicate and silicone resins.

REMARKS

Status of the Application

In the Office Action, claims 13, 15-18, 25 and 26 were rejected, and claims 14 and 19-24 were objected to. In the present Amendment, claims 13 and 19 have been amended so that claims 13–26 are pending. No new matter has been added.

Upon reviewing claim 19 Applicants discovered that the reactive particles of component A had been erroneously identified as being monomeric or polymeric element-organic compounds selected from the group consisting of orthotitanic acid ester, orthozirconic acid ester, titanium tetralactate, hafnium tetrabutoxide, tetraethyl silicate and silicone resins. In fact, as disclosed at page 7, lines 11-21 of the patent application as originally filed, these monomeric and polymeric element-organic compounds are simply compounds that may be included, along with components A, B, and C, in the coating composition according to claim 13. As a result, Applicants have amended Claim 19 to point out that the coating composition according to claim 13 is further comprised of monomeric or polymeric element-organic compounds selected from the group consisting of orthotitanic acid ester, orthozirconic acid ester, titanium tetralactate, hafnium tetrabutoxide, tetraethyl silicate and silicone resins. Applicants regret any inconvenience that this error may have caused.

Objection to Claims 14 and 19-24

Claims 14 and 19-24 have been objected to for depending from a rejected base claim. The Examiner, however, indicates that these claims would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims. The Examiner takes the position that claims 14 and 19-24 would be allowable if rewritten because 1) the thermal curing steps of Applicants' claimed process are novel and unobvious over the prior art, and 2) the specific reactive particles claimed by Applicants in claims 14 and 19 produces a coating

composition that is novel and nonobvious over the prior art. More specifically, the Examiner asserts that although Vassiliou allegedly discloses a coating composition comprising a colloidal silica, fluorocarbon polymer and a number of additives, Vassiliou does not mention that his coatings can be cured at elevated temperatures, or that crosslinking agents can be used. The Examiner further explains that Vassiliou neither teaches, nor suggests either the R1 radicals of Applicants' claim 14, or the reactive particles of Applicants' claim 19.

The Applicants, however, submit that in light of the comments contained herein below claim 13 is neither rendered obvious, nor anticipated by Vassiliou or Majumdar. Accordingly, Applicants submit that claim 13 is in condition for allowance thereby obviating the Examiner's objection to claims 14 and 19-24. Withdrawal of these objections is requested.

Rejections Under 35 U.S.C § 102(e)

Claims 13, 15-18 and 25 stand rejected under 35 U.S.C § 102(e) as being anticipated by Majumdar (U.S. Patent No. 6,171,769 B1). The Examiner asserts that Majumdar discloses a "photographic element comprising an antistatic coating layer on a substrate, where the antistatic layer comprises a colloidal silica, a polymeric binder, and an electrically conductive element...." The Examiner takes the position that the photographic element, as a result of containing an electrically conductive element, is itself an electrical conductor. The Examiner also asserts that the preferred colloidal silica is Ludox® AM, which is a silica modified to contain hydroxyl groups, and that the silica is present as a silica-oxygen network in the form of 5-25 nm particles. Finally, the Examiner asserts that a "wide range for weight ratios of silica to binder, where additives can also be included" are disclosed. In accordance with these assertions, the Examiner takes the position that one of ordinary skill in the art would envision both the Applicants' claimed weight ratios of the components, and the hydroxyl groups being present in the applicant's range of "up to 98 wt.%".

The Examiner further asserts the claims 15-16 of Applicants' invention limit R3 and R4 "without limiting the reactive particles to contain additional radicals R3 and R4." The Examiner claims that Majumdar does not contain R3 and R4 radicals because the silica particles of Majumdar do not have additional functionality, and therefore Majumdar anticipates the present invention, despite the R3 and R4 limitations of claims 15-16.

Applicants, however, respectfully disagree with the Examiner's stated position because the coating composition disclosed by Majumdar is not identical to the coating composition claimed by Applicants. More specifically, the coating composition of Applicants' claimed invention does not contain the conducting agent of Majumdar. In fact, adding the conducting agent of Majumdar to the coating composition claimed by Applicants would completely destroy the insulative properties of Applicants' claimed coating composition, thereby rendering their coating composition inoperative. As can be more clearly understood by referring to page 1, lines 1-17 and page 2, lines 23-31, Applicants' coating composition is intended to be used as an insulative coating for magnetic wires, which are in turn intended to be used in electrical motors. As a result, Applicants' coating composition relates to an insulative coating layer, and not to a conductive/antistatic coating layer as disclosed by Majumdar.

Moreover, Majumdar's disclosure failed to put the public in possession of Applicants' claimed coating composition before Applicants' date of invention, and therefore are not enabling. As stated in Section 2121.01 of the MPEP "[s]uch possession is effected if one of ordinary skill in the art could have combined the publication's description of the invention with his [or her] own knowledge to make the claimed invention." As Majumdar teaches that a conducting agent be added to the coating composition, the public was not in possession of Applicants' insulative, and therefore electrically nonconductive, coating composition.

Furthermore, Applicants are most confused by the Examiner's assertion that because photographic paper is coated with an antistatic layer that contains a conductive agent, the photographic paper is transformed into an electrical conductor. To the contrary, the term "electrical conductor" is defined by http://scienceworld.wolfram.com/physics/ElectricalConductor.html as "a substance through which electrical current flows with small resistance." There is no electricity flowing through the photographic paper. In contrast, a conductive agent is incorporated into the antistatic coating being applied to the photographic paper so that the electric charges that have built up on the surface of the photographic paper can be effectively discharged from the paper. As a result, the conducting agent contained in the coating composition disclosed by Majumdar is conducting the electricity, and not the photographic paper.

In sum, Majumdar does not anticipate Applicants' claimed invention because 1) the conductive agent that Majumdar discloses as a necessary part of his antistatic coating composition would render Applicants' claimed invention inoperative by completely destroying the insulative properties that Applicants' claimed coating composition is required to possess, and 2) the disclosure of Majumdar is not enabling and therefore the public was not in possession of Applicants' insulative, and therefore electrically nonconductive, coating composition prior to Applicants' date of invention. Accordingly, Applicants' respectfully request that the Examiner withdraw this rejection.

Rejections Under 35 U.S.C § 102(b)

Claims 13, 15-18 and 25-26 stand rejected under 35 U.S.C § 102(b) as being anticipated by Vassiliou (U.S. Patent No. 3,986,993). The Examiner asserts that Vassiliou discloses "a coating composition comprising a colloidal silica, a fluorocarbon polymer, and a number of additives", wherein the colloidal silica used is preferably Ludox® AM, and is preferably comprised of particles ranging in size from 7 to 25 millimicrons. The Examiner further asserts that "[c]omposition A shows ~31wt.% colloidal silica, ~46 wt.% of polymer binder dispersion, and ~23 wt.% of additives or solvents." In view of the disclosures in Majumdar regarding surface modification of Ludox® AM silica particles, the Examiner takes the position that one of ordinary skill in the art would envision hydroxyl groups being present in the applicant's range of "up to 98 wt.%". The Examiner also claims that because the coatings prepared according to Vassiliou are intended to coat metal substrates, Vassiliou is in effect providing coatings for electrically conductive substrates.

The Examiner further asserts the claims 15-16 of Applicants' invention limit R3 and R4 "without limiting the reactive particles to contain additional radicals R3 and R4." The Examiner claims that Vassiliou does not contain R3 and R4 radicals because the silica particles of Vassiliou do not have additional functionality, and therefore Vassiliou anticipates the present invention despite R3 and R4 limitations of claims 15-16.

Applicants, however, respectfully disagree with the Examiner as the fluorocarbon coating composition of Vassiliou does not contain the inorganic-organic-oxygen network of Applicants' claimed coating composition. Instead, the colloidal silica of Vassiliou is being utilized as an inorganic component in an

inorganic-oxygen network, whereas the components of Applicants' claimed invention are being reacted so as to produce an inorganic-organic-oxygen network.

While the composition of Vassiliou does contain fluorocarbon polymers and colloidal silica, Vassiliou expressly indicates at column 2, lines 3-12 that these fluorocarbon polymers are "completely substituted with fluorine atoms or a combination of fluorine atoms and chlorine atoms." As a result, it is readily apparent that the fluorocarbon polymers of Vassiliou do not have any chemical groups available to react with the OH-groups of the colloidal silica, and therefore, as is indicated at column 3, lines 1-19, the fuorocarbon polymers and colloidal silica are contained in the coating composition of Vassiliou as two separate colloidal species. Furthermore, as is indicated at column 3, lines 1-19, these separately existing colloidal species form two separate networks when the coating composition of Vassiliou is baked to form a finish, "with the network of one occupying the empty spaces of the network of the other." Nowhere does Vassiliou ever mention that a chemical bond is, or can be, formed between the colloidal silica and fluorocarbon polymers of his composition, but instead expressly indicates that both of these components are contained in the coating composition as either separate and distinct colloidal species, or in the finish as separate and distinct networks.

Moreover, because the fluorocarbon polymer and colloidal silica contained in Vassiliou's composition cannot form an organic-inorganic-oxygen network by chemically bonding to each other, Vassiliou's composition cannot possibly obtain the high partial discharge resistance that is obtained by the coating composition according to Applicants' claimed invention. More specifically, the organic and inorganic components of Applicants' claimed coating composition do not exist as separate entities, but instead chemically bond to each other to form an organic-inorganic-oxygen network. It is through the formation of this organic-inorganic-oxygen network that a coating composition having high partial discharge resistance is obtained by Applicants. As a result, even if a wire were to be coated with the composition of Vassiliou, the high partial discharge resistance obtained by the wires coated with the composition according to Applicants' claimed invention would not be obtained.

In sum, Applicants' claimed coating composition is not anticipated by Vassiliou because 1) Vassiliou's fluorocarbon polymers and colloidal silica are not

able to form the organic-inorganic-oxygen network formed by the coating composition of Applicants' claimed invention, as Vassiliou's completely substituted fluorocarbon polymers are not capable of chemically bonding to the colloidal silica, and 2) Vassiliou's coating composition is not capable of obtaining the high partial discharge resistance obtained as a result of the organic-inorganic-oxygen network produced by the components of Applicants' claimed invention. Accordingly, Applicants respectfully request that the Examiner withdraw this rejection.

Summary

In view of the foregoing amendments and remarks, Applicants submit that this application is in condition for allowance. In order to expedite disposition of this case, the Examiner is invited to contact Applicant's representative at the telephone number below to resolve any remaining issues. Should there be a fee due which is not accounted for, please charge such fee to Deposit Account No. 04-1928 (E.I. du Pont de Nemours and Company).

Respectfully submitted,

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Date: 2/20/03

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the amended claims, additions are shown as underlined, whereas deletions are shown in brackets.

In the claims:

Claim 13. (amended) A coating composition for electrical conductors, comprising:

(A) 1-60 wt.% of at least one reactive particle, said reactive particles having an average radius ranging from 1nm to 300nm, wherein said reactive particles are based on an element-oxygen network, and wherein the elements are selected from the group consisting of silicon, zinc, aluminum, tin, boron, germanium, gallium, lead, the transition metals, and [the] lanthanides and actinides;

(B) 0-90 wt.% of at least one conventional binder; and

(C) 0-95 wt.% of at least one conventional additive, solvent, pigment and/or filler;

wherein the element-oxygen network of said reactive particles has at least one reactive function R_1 and optionally at least one non-reactive and/or at least one partially reactive functions R_2 and R_3 bound by way of an oxygen of the element oxygen-network to the surface of said reactive particles, the reactive function R_1 being contained in an amount up to 98 wt.% of said reactive particles and the non-reactive and/or partially reactive functions R_2 and R_3 being contained in an amount from 0-97 wt.% of said reactive particles;

wherein R_1 comprises radicals selected from the group consisting of metal acid esters, NCO, urethane groups, epoxide groups, epoxy, carboxylic acid anhydride, C=C double bond systems, OH, alcohols bound by way of oxygen, alcohols bound by way of esters, alcohols bound by way of ethers, chelating agents, COOH, NH_2, NHR4, and reactive resin components;

wherein R_2 comprises radicals selected from the group consisting of aromatic compounds, aliphatic compounds, fatty acid derivatives, esters, and ethers;

wherein R_3 comprises resin radicals;

wherein R_4 comprises radicals selected from the group consisting of acrylate, phenol, melamine, polyurethane, polyester, polyester imide, polysulfide, epoxide, polyamide, polyvinyl formal resins, aromatic compounds, aliphatic compounds, esters, ethers, alcoholates, fats, and chelating agents.

Claim 19. (amended) A coating composition according to claim 13, [wherein the reactive particles of component (A) are] <u>further comprising</u> monomeric or polymeric element-organic compounds selected from the group consisting of orthotitanic acid ester, orthozirconic acid ester, titanium tetralactate, hafnium tetrabutoxide, tetraethyl silicate and silicone resins.